

RESTORATION OF ST. BOTOLPH'S,
BOSTON.

We are informed that Mr. G. G. Place, of Nottingham, has been appointed architect to the above work, the committee at the same time appointing Mr. Scott as their "Consulting Architect." The restorations proposed by Mr. Place comprise, amongst others, new tracery and stained glass to east window of chancel; new sedos; new chancel floor; complete restorations of south-west chapel, south porch, and west doorway; restoration of clerestory stations; chancel screen; removal of organ; reseating nave with open oak benches; and opening the magnificent lantern of the tower. The inhabitants and their friends have raised above 3,500*l.* in less than two months towards this undertaking, in addition to 3,821*l.* expended upon the material fabric in 1843-1846.

PAINE'S MAGNETO-ELECTRIC
APPARATUS

AND THE REAL QUESTIONS AT ISSUE.

As some of our contemporaries, among whom we are rather surprised to see the *Athenæum*, are entirely and curiously in error as to the actual questions at issue in respect to the alleged inventions and discoveries of the American electrician, Mr. Paine, we deem it worth while, as these questions have in the meantime assumed an aspect of decided practical importance and public interest, to point them out with a little more specificity than has yet been accorded them,—and this we feel the more induced to do, that, as commentators, and as claiming for a countryman of our own, in the event of their truth being established, those peculiar views which seem to have led to, or at least to have explained, the alleged inventions and discoveries,—we in particular have been charged, by implication, with ignorance and error by the very parties who have based their own criticisms on an utterly mistaken view of the whole subject.

In the first place, then, it is a complete mistake to assert, as one writer does, that there is "nothing new or extraordinary" either in the apparatus alleged to have been invented by Mr. Paine, or in the facts alleged to have been established by him. There is decided novelty in both, whatever fallacy or unreality there may be in either. In the next place, it is as complete a mistake to assert that there is anything really "new" in the "views" or "notions" of Mr. Paine, these views or notions being, moreover, merely his mode of attempting to explain the singular facts alleged to have been established by the action of his new and peculiar magneto-electrical apparatus.

As to Mr. Paine's "mode of proceeding," apart from his own mere "notions," is there "nothing new or extraordinary" in this?

"When hydrogen alone is wanted the negative wire is made continuous and free to act, while the positive is interrupted by means of a small glass of water, into which the broken or separate sections of that wire are dipped without contact. On the contrary, when oxygen alone is required, the positive wire is made continuous and the negative is interrupted. When both oxygen and hydrogen are to be eliminated, as in the ordinary magneto-electric machine, both wires are made continuous, or neither is interrupted."

New and extraordinary as the two former of these allegations are, they only constitute one element in the real "question" at issue as to Mr. Paine's mode of proceeding. By means of this one element of novelty peculiarity of action is alleged to be obtained in the magneto-electric machine. By another, namely the association of water with a peculiarly formed helix, intensity of action is alleged to be obtained; and by yet another novelty, namely the invention of a peculiar electrode, the safety of this peculiar and intense action is said to be insured. Here

"The establishing" of nascent hydrogen, by means of turpentine, involves any visible expenditure of carbon or turpentine on the hydrogen so "established," constitutes another element in the actual questions at issue, the recognition of which, so much, might have been also insisted on in the above enumeration. As for the conversion of water solely into hydrogen, or solely into oxygen, that question is implied in the possibility of the action of Paine's apparatus: we have something more to say on this subject.

are these great points in Mr. Paine's pretensions, which must be recognized, however speedily they may be thereupon refuted, and to overlook these, and not to recognise their novelty at least, betrays a "sad ignorance" indeed of the present state of electrical or magneto-electrical science.

Then, again, as to Mr. Paine's "new views" or "notions," it seems to be imagined that it is sought to overturn the "scientific fact" that "oxygen and hydrogen in combination give us that valuable fluid" water! Now neither Mr. Paine's "facts" nor "his notions" necessarily do so. Not only would oxygen and hydrogen in combination still give us water; but water would still give us oxygen and hydrogen, as indeed is plainly stated on the part of Mr. Paine himself. The following "notions" of Sir Humphrey Davy we are induced here to quote from his collected works, as they seem to have been written, in the spirit of foresight, for this very purpose and occasion:—

"Even if it should be ultimately found that oxygen and hydrogen are the same matter in different states of electricity, or that two or three elements in different proportions constitute all bodies, the great doctrine of chemistry, the theory of definite proportions, and the specific attractions of bodies, must remain immutable. The causes of the difference of form of the body supposed to be elementary must then be ascertained, and the only change in the science would be that those substances now considered as primary elements must be considered as secondary."

"The improvements taking place in the methods of examining bodies are constantly changing the opinions of chemists with respect to their nature, and there is no reason to suppose that any real indestructible principle has been yet discovered. Matter may ultimately be found to be the same in essence, differing only in the arrangements of its particles, or two or three simple substances may produce all the varieties of compound bodies. The results of our operations must be considered as offering, at best, approximations only to the true knowledge of things, and should never be exalted as a STANDARD to estimate the resources of nature."—Vol. iv., p. 132.

"We know nothing of the true elements belonging to nature; but as far as we can reason from the relations of the properties of matter, hydrogen is the substance which approaches nearest to what the elements may be supposed to be."—Vol. iv., p. 359.

"If that sublime idea of the ancient philosophers which has been sanctioned by the approbation of Newton should be true, namely, that there is only one species of matter, the different chemical as well as mechanical forms of which are owing to the different arrangements of its particles, then, a method of analyzing these forms may probably be found in their relations to radiant matter."—Vol. iv., p. 164.

Sir Humphrey seems to have actually anticipated the discovery of just such inventions as those claimed by Mr. Paine, and whatever be the real merits of these (and however favourably we may have been impressed with a belief in their verisimilitude, we remain as open as ever to conviction of their fallacy or falsity, whenever the evidence may appear to lead to that conclusion), nevertheless, we have no manner of doubt that Sir Humphrey's anticipations will yet be realised. But it is not by the merely "quasi-scientific" that so sublime an idea and discovery as that just referred to will be either realized on the one hand, or appreciated on the other.

As to the novelty of Mr. Paine's explanatory hypothesis or notion, in which hypothesis the writer in the *Athenæum*, as well as others, has been led to think that the whole strength of his claim lies, let us see how it is even as to that point. Mr. Paine thanks, according to Dr. Foster, in the *Scientific American*, that oxygen may be composed of one substance and positive electricity, while the same substance with negative electricity may be hydrogen:—

"May not water, combined with two different imponderable principles, one setting the negative and the other the positive part, constitute oxygen and hydrogen, and may not these two ethereal principles be what some excellent electricians have called the vitreous and resinous electricity? And may they not form fire by their attraction or neutral

approximation? Then, whenever they are discharged, water would appear, and if they were discharged when one portion of water was in chemical union with other matter there is no reason why the other portion free from elastic matter should not fix itself, which would account for condensation."

Now, although this be essentially Mr. Paine's "new view," the words in which this "quasi-scientific" novelty is here quoted, are those of Sir H. Davy himself!

We trust, now that we have "robbed it of (some at least of) its absurdity," and shown where some of the "errors somewhere" lie, that "the question" at issue, whatever be its real merits, will appear in a somewhat different light from that in which it has been lately misrepresented, and that henceforth writers in respectable journals will take a little more care how they charge others with ignorance or absurdity on such a subject merely in consequence of labouring in error as to it themselves.

The plan and description of a double apparatus on Paine's principle, with a simple movement by means of a weight, has recently appeared in contemporary columns. As the principle appears to be the same, however, as that already treated of, although the arrangements are necessarily different, we need not describe this new apparatus under present circumstances.

PRESERVATION OF OAK.

In your last number of *THE BUILDER*, "T. M. H." asks to be informed what will prevent oak mullions, or any other work left of its natural colour, splitting from exposure to the sun and wind. I am not certain, or ever heard, that any process can entirely prevent the wood so exposed from splitting; but the following may be found to have some good effects. The oak to be used for mullions, or any kind of joiner's work, exposed and not painted, should be entirely of the heart of the tree; and the lighter the colour of the wood the better to be depended on.

To season it:—The nearer the timber approaches the dimensions required from the saw the more likely is it to get seasoned. It should be placed on the north side of a building, and sheltered from the extremities of the wind and rain. Place one piece upon another, interposing blocks between them; and that the timber may not leave, but dry equally, daub it over with cow dung. Thus it must remain at least twelve months. After this saw it to the size required; then lay it in a tank or pool of water for several hours; from thence into a copper of boiling water, continuing boiling for one or more hours, according to the size of the timber (steaming the wood no doubt would be nearly as good); afterwards it should be placed upright to drain on the north side of a building, exposed to the wind and rain, and gradually, within three or four months, to the sun, when it may be used for its respective work.

The above suggestions may be found to counteract, to a very great degree, the influence of the sun and wind on timber; but I am disposed to think but few carpenters or joiners will take the trouble to effect it by the process recommended, from the length of time required.

Much may likewise be done by the choice of oak grown upon a chalky soil, and felled at midwinter (instead of the spring), and in the last quarter of the moon, and immediately barked and planed; and then lay the planks in some pool or running stream for a few days, and afterwards dry them in the air and sun gradually: they will neither cast, warp, nor, it is more than probable, ever rift or cleave.

W. C. S.

CHELSEA COLLEGE.—A petition, numerous and respectfully signed, is to be presented to the Commissioners of this Royal Hospital from the inhabitants of Chelsea for the removal of the ugly and unwholesome dead walls now surrounding the grounds and obstructing the view of that national institution.